

IGCSE 08 Programming(1)

Comparison operators

Concept	Pseudocode	Python
Variable	DECLARE FirstVar: Integer	firstVar = 30
Constant	CONSTANT FirstConst = 500	FIRSTCONST = 500
Basic Type	1. Integer – a positive or negative whole number that can be used with mathematical operators. 2. Real – a positive or negative number with a fractional part; real numbers can be used with mathematical operators. 3. Char – a variable or constant that is a single character. 4. String – a variable or constant that is several characters in length. 5. Boolean – a variable or constant that can have only two values, TRUE	1. int 2. float 3. bool 4. str 5. bytes
Basic Type code	DECLARE FirstInt : INTEGER DECLARE FirstReal : REAL DECLARE Female : CHAR DECLARE FirstName : STRING DECLARE Flage : BOOLEAN	FirstInt = 25 FirstReal = 25.0 Female = 'F' FirstName = 'Emma' Flag = True
Input/Output	OUTPUT "Enter a whole number " INPUT FirstInt OUTPUT "Number is " FirstInt	FirstInt = int(input("Enter a whole number")) Print ("Number is ", FirstInt)
sequence	The ordering of the steps in an algorithm.	The ordering of the steps in an algorithm.
Selection	IF Age > 17 THEN OUTPUT "You are an adult" ELSE OUTPUT "You are a child" ENDIF	if Age > 17: print "You are an adult" else: print "You are a child"
CASE statement	CASE OF OpValue "+" : Answer = Number1 + Number2 "-" : Answer = Number1 - Number2 "*" : Answer = Number1 * Number2 "/" : Answer = Number1 / Number2 OTHERWISE OUTPUT "invalid operator" ENDCASE	if OpValue == "+": Answer = Number1 + Number2 elif OpValue == "-": Answer = Number1 - Number2 elif OpValue == "*": Answer = Number1 * Number2 elif OpValue == "/": Answer = Number1 / Number2 else: print("invalid operator")
Iteration for statement	FOR Counter ← 1 TO 10 STEP 2 OUTPUT Counter NEXT Counter	for Counter in range (1,10,2): print(Counter)
Iteration pre-condition	WHILE TotalWeight < 100 TotalWeight = TotalWeight + Weight ENDWHILE	while TotalWeight < 100: TotalWeight = TotalWeight + Weight
Iteration post-condition	REPEAT NumberOfItems = NumberOfItems + 1 UNTIL NumberOfItems > 19	
totalling and counting	TotalWeight = TotalWeight + Weight NumberOfItems = NumberOfItems + 1	TotalWeight = TotalWeight + Weight NumberOfItems = NumberOfItems + 1
String-LENGTH	LENGTH("Computer Science") LENGTH(MyString)	len("Computer Science") len(MyString)
String-SUBSTRING	SUBSTRING("Computer Science", 10, 7) First parameter is the string second parameter is the position of the start character third parameter is the length of the required substring. SUBSTRING(MyString, 10, 7)	"Computer Science"[9:16] MyString[9:16]
String-UPPER	UCASE("Computer Science") UCASE(MyString)	"Computer Science".upper() MyString.upper()
String-LOWER	LCASE("Computer Science") LCASE(MyString)	"Computer Science".lower() MyString.lower()

Comparison operators

Concept	Pseudocode	Python
add	+	+
Subtract	-	-
Multiply	*	*
Divide	/	/
Raise to the power of	^	**
Group	()	()
Reminder division	MOD	%
Greater than	>	>
Less than	<	<
Equal	=	=
Greater than or equal	>=	>=
Less than or equal	<=	<=
Not equal	<>	!=
Both True	AND	and
Either True	OR	or
Not True	NOT	not
Procedure stars - definition	PROCEDURE Stars OUTPUT ***** ENDPROCEDURE	def Stars(): print("*****")
Procedure Stars with parameter – definition	PROCEDURE Stars (Number:INTEGER) DECLARE Counter : INTEGER FOR Counter ← 1 TO Number OUTPUT " "* NEXT ENDPROCEDURE	def Stars(Number): for counter in range (Number): print(" ", end = " ")
Function with a parameter and return	FUNCTION Celsius(Temperature: REAL) RETURNS REAL RETURN (Temperature – 32) / 1.8 ENDFUNCTION	def Celsius(Temperature): return (Temperature - 32) / 1.8
MOD, DIV, ROUND and RANDOM	Value1 ← MOD(10, 3) Value2 ← DIV(10, 3) Value3 ← ROUND(6.97354, 2) Value4 ← RANDOM()	Value1 = 10%3 Value2 = 10//3 Value = divmod(10,3) Value3 = round(6.97354, 2) from random import random Value4 = random()
comments	// pseudocode uses a double slash to start a comment	#Python uses hash to start a comment for every line

Arrays

```
DECLARE MyTable : ARRAY[0:9,0:2] OF INTEGER
OUTPUT "Enter these values in order"
OUTPUT "27, 19, 36, 42, 16, 89, 21, 16, 55, 34"
OUTPUT "31, 67, 98, 22, 35, 46, 71, 23, 11, 76"
OUTPUT "17, 48, 29, 95, 61, 47, 28, 13, 77, 21"
FOR ColumnIndex ← 0 TO 2
    FOR RowIndex ← 0 TO 9
        OUTPUT "Enter next value "
        INPUT MyTable[RowIndex, ColumnIndex]
    NEXT RowIndex
NEXT ColumnIndex
```

Files

```
DECLARE TextLine : STRING  // variables are declared as normal
DECLARE MyFile : STRING
MyFile ← "MyText.txt"

// writing the line of text to the file
opens file for writing //OPEN MyFile FOR WRITE
    OUTPUT "Please enter a line of text"
    INPUT TextLine
    WRITEFILE, TextLine // writes a line of text to the file
CLOSEFILE(MyFile) // closes the file

// reading the line of text from the file
OUTPUT "The file contains this line of text:"
OPEN MyFile FOR READ // opens file for reading
    READFILE, TextLine // reads a line of text from the file
    OUTPUT TextLine
CLOSEFILE(MyFile) // closes the file
```